**Credit Risk Evaluation using Scorecard Modeling for MSMEs**

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#### Executive Summary

This project simulates a comprehensive credit risk evaluation framework tailored for MSMEs (Micro, Small & Medium Enterprises) using dummy data. By applying a structured scorecard-based approach, each MSME is evaluated on financial and behavioral parameters. The goal is to generate an objective credit risk score and recommend funding eligibility — mimicking real-world credit assessment systems used by banks and NBFCs.

#### **Objective**

To design and implement a credit risk scorecard model that evaluates MSME borrowers using multi-dimensional criteria and outputs:

A risk score (0–100)

Risk grade (e.g., A1, B2, C)

Credit decision (Eligible/Decline)

#### **Research Methodology**

This project follows a structured methodology to simulate a real-world credit appraisal process for MSMEs using Excel.The methodology is divided into six key stages:

**Stage 1:** Selection of Credit Parameters

13 key parameters were selected based on their relevance to MSME lending, grouped into five pillars:

**Financial Strengths:** Avg Monthly Bank Balance, Net Monthly Income, Existing Loan EMI

**Operational Data:** Years in Business, Inventory Turnover (per month), No of Employees

**Tax Compliance:** GST Filing Regularity, Latest ITR Filing, Udyam Registration

**Digital Behavior:** UPI Transactions, Mobile Recharge Consistency

**Quantitative Factors:** Experience of Promoter, Supplier Reputation

These parameters were chosen because they represent critical indicators of repayment capacity, business stability, and transparency — especially important for small borrowers who may lack formal financial statements. The aim is to assess borrowers objectively across multiple dimensions and derive automated credit ratings and lending decisions.

**Stage 2:** Parameter Scoring

Each parameter was scored on a scale of 0 to 100 based on defined thresholds using Excel formulas.

Example:

A company with average bank balance > ₹1,00,000 → Score = 100

Company with poor GST filing regularity → Score = 40 or below

This normalization allows parameters of different types to be compared on a common scale.

**Stage 3:** Weight Assignment

Each parameter was assigned a specific weight (in %) based on its importance in credit evaluation. For example:

Avg Bank Balance: 10%

Promoter Experience: 10%

GST Filing Regularity: 5%

The total weight of all parameters = 100%.

**Stage 4:** Weighted Score Calculation

The Weighted Score for each parameter was calculated as:

Weighted Score = (Raw Score ÷ 100) × Parameter Weight

Then, the Total Score is the sum of all weighted scores.

This score represents a borrower’s overall credit strength on a 0–100 scale.

**Stage 5:** Credit Rating Assignment

Based on the total score, the borrower is classified into one of five ratings:

A1 > 85

70 > A2 < 85

55 > B1 < 70)

40 > B2 < 55)

C < 40

**Stage 6:** Lending Recommendation

Finally, based on credit score and rating, a lending recommendation is given:

A1 / A2 / >70 Eligible

B1 / 55–70 Conditionally Eligible

B2, C / <55 Decline

**Tools Used:**

Excel Formulas: IF, COUNTIFS, SUM, SUMIF, INDEX, MATCH, RANK, etc.

Data Validation: for dropdown borrower selection

Conditional Formatting: for score colors, eligibility alerts

Charts: Bar Chart, Pie Chart, Line Chart

#### **Credit Evaluation Summary**

**A1 (Score > 85): 14 Companies (28%)**

A1 borrowers represent top-tier MSMEs with excellent financial health, stable incomes, and low EMI burdens. They regularly file GST and ITR, maintain strong banking behavior (steady balances and digital transactions), and show high promoter experience. These businesses are ideal for low-risk lending, and many can be auto-approved or pre-qualified for higher credit limits. Their high digital traceability reduces underwriting effort. This segment reflects strong credit discipline and business maturity. Lending institutions should prioritize A1 borrowers for tailored offers, cross-selling, and longer-term credit products. With a 28% share, they form a reliable foundation for any MSME portfolio.

**A2 (Score 70–85): 6 Companies (12%)**

A2 borrowers are financially stable with minor gaps — such as higher EMI ratios, limited digital documentation, or newer promoter experience. They exhibit good banking and income records but may lack full compliance (e.g., delayed ITRs or partial GST filing). Representing 12% of the data-set, they are moderate-risk but reliable, and can be approved with minimal manual checks. These borrowers are well-suited for structured credit lines with slightly conservative terms. With the right engagement, they have the potential to upgrade to A1. Lenders can treat this segment as a growth opportunity, balancing credit access with manageable risk.

**B1 (Score 55–70): 16 Companies (32%)**

The largest group (32%), B1 borrowers display average financial health with mixed indicators. Common issues include moderate income, higher EMI burden, irregular banking activity, or insufficient documentation. Promoter experience may be limited, and compliance is often partial. These MSMEs require manual underwriting, additional scrutiny, and shorter loan tenures. While not high risk, B1 borrowers represent a tipping point — with support, they may graduate to A2, but without guidance, they risk downgrading. Lenders should offer conditional approvals, credit education, or collateral-based options. This category highlights the need for risk-balanced expansion and targeted financial inclusion.

**B2 (Score 40–55): 2 Companies (4%)**

B2 borrowers are at moderate-to-high risk, often due to low income stability, thin banking activity, or weak credit behavior. They may lack digital footprints, file no GST/ITR, and have limited promoter history. While a small segment (4%), they pose challenges for credit assessment. Loans, if offered, should be secured, small-ticket, and short-term, ideally with additional documentation. These borrowers may benefit from credit-building tools and targeted financial education. Conservative exposure is key. B2 borrowers may be viable over time, but for now, lenders must tread carefully and treat this group as watch list accounts.

**C (Score < 40): 12 Companies (24%)**

grade MSMEs (24%) show poor creditworthiness — irregular income, high EMI ratios, and minimal formal compliance. These businesses often operate in informal sectors with no digital history, unverified income, and no ITR/GST filings. Promoters may lack experience or default history. Lending to this group carries very high risk, and most should be declined or routed to non-traditional financing models (e.g., microfinance or government schemes). This segment highlights the formalization gap among MSMEs. Without collateral or strong alternate data, their inclusion in commercial lending portfolios is discouraged.

#### **Strategic Recommendation**

Out of 50 MSMEs, 40% (A1 & A2) are prime candidates for immediate credit deployment, showcasing strong financial health and digital compliance. The 32% in B1 and B2 indicate untapped potential but require tighter risk controls, such as reduced loan tenures, collateral backing, or income validation. Meanwhile, 28% in the C category present high default risk and should be excluded from standard lending, unless supported by guarantees or formalization programs. Strategically, the portfolio should focus on scaling lending to A-grade borrowers while nurturing B-grade borrowers through financial literacy, credit-building products, and digital on-boarding to improve their future credit eligibility.

#### **Conclusion**

This project showcases how data-driven scorecards can bridge the gap between financial access and credit risk, especially for MSMEs. By simulating real-world borrower behavior, it demonstrates a scalable approach to responsible lending. The insights pave the way for smarter, inclusive credit ecosystems powered by analytics.

#### **Appendix**:



#### Embedded Excel Dataset and Scorecard